

Claims

205 1. A method for safely coupling an external voltage network to an operating voltage network, in particular of a motor vehicle, in which at least one controllable switch (Q_2) is arranged between the operating voltage network (BN) and a connecting terminal (VK), the at least one controllable switch is connected to a control unit (SG), the connecting terminal (VK) is designed for connection of the external voltage network (FN) and the method comprises the following steps:

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- measuring the voltage at the connecting terminal (VK),
- 215 – examining whether the measurement voltage is not below a lower threshold value and not in excess of an upper threshold value,
- closing the controllable switch (Q_2) if the measurement voltage is within the permissible range,

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- measuring the current flowing between the connecting terminal (VK) and the operating voltage network (BN),
- examining whether the current is not below a lower threshold value,

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- opening the at least one controllable switch (Q_2) if the current is outside the permissible range.

230 2. A method according to claim 1, characterized in that the method steps are carried out with activated ignition lock (Q_1) only.

235 3. A method according to claim 1, characterized in that the controllable switch (Q_2) is opened when the current between the connecting terminal (VK) and the operating voltage network (BN) is in excess of an upper threshold value.

240 4. A method according to claim 1,
characterized in that, after opening of the controllable switch (Q_2), this
state is maintained until the voltage at the connecting terminal (VK)
drops to zero or falls below a lower threshold value.

245 5. A method according to claim 1,
characterized in that the measurement of the voltage at the connecting
terminal (VK) is carried out permanently during the entire process.

250 6. A method according to claim 1,
characterized in that the results of the measurement result examination
steps are output via a display unit (AE).

255 7. A method according to claim 1,
characterized in that, after opening of the at least one controllable
switch (Q_2), said switch (Q_2) is closed again at regular intervals in order
to determine whether the operational state that caused opening of said
switch (Q_2) is still present.

260 8. A circuit arrangement for carrying out the method according to any of
claims 1 to 7.

265 9. A circuit arrangement according to claim 8,
characterized in that the controllable switch (Q_2) is a relay.

10. A circuit arrangement according to claim 8 or 9,
characterized in that the connecting terminal (VK) is covered by a cap
(AK) and the latter is connected to a switch (Q_3) such that the switching
state of said switch (Q_3) changes upon removal of the cap from the
connecting terminal (VK).

11. A circuit arrangement according to any of claims 8 to 10,

270 characterized in that the operating voltage network (BN) is the supply network of a first motor vehicle (A) and that the external voltage network (FN) is the supply network of a second motor vehicle (B), or a charging device.

275 12. A circuit arrangement according to claim 8,
characterized in that a measurement resistor (Rm) is connected between the terminal means of the connecting terminal (VK).